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Social-Academic Climate in Online Learning Environments

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Abstract. This paper is based on a study that examined students' perceptions of social-academic climate in several faculties and departments at the Ariel University Center over five years. Findings indicate the significance that students attribute to various dimensions of social-academic climate. Findings also show that students attribute greater significance to instructors' attitude to students and less significance to course organization in faculties and departments that are characterized by positive inter-personal interactions between students and instructors. In faculties and departments in which interpersonal interactions between students and instructors are not intensive, students attribute significance to scholastic aspects of courses. Even in the technological era, social-academic climate has not lost is importance, and its contribution to students' sense of satisfaction is critical.

Keywords: IT (information technologies), learning culture, technology-supported teaching, virtual courses, academic climate, social-academic climate.

1. The introduction of IT and its impact on teaching and learning

In the past decade, higher education systems have experienced two revolutions [1]. As a result of the first revolution, we are witnessing an enormous increase in computer and information technologies (henceforth IT) that are changing the entire world. The number of computers per household has increased by tens of percentage points each year. In the US, the ratio of computers and pupils was 1:10 in 2000, compared to 1:125 in 1984 (Coley, Cradler, & Engel, 2000). In 2001, two-thirds of all US household with school-aged children had a computer (US Census Bureau). Figures for 2007 showed

another dramatic increase: 93% of all US children between the ages of 12 and 17 were connected to the internet at home (MacGill, 2007a).

The numerous computer applications, including data processing, information systems, graphic design, presentations, access to movies, electronic communications, have all transformed the PC to a tool that is involved in all aspects of everyday live. As computer applications have become universally accessible, individuals today are used to a computerized reality. The second revolution, which some call the "quiet revolution" is reflected in the replacement of the *teaching culture* that dominated higher education by a *learning culture*. Since the 1990s, recognition is growing that the aim of higher education institutions is not to teach but to cultivate learning, using various means and methods (Barr & Tagg, 1995). The dissemination of IT changed significantly with their global development.

At the same time, the establishment of the Internet created a new reality that meshed with the social and cultural reality (Yogev, 1999). IT addresses the process of information creation and processing, and as such it has a significant impact on the pace of life. Exposure to infinite quantities of information at the click of a button is one of the greatest revolutions that human civilization has ever experienced (Rotem, 1997). It seems that the impact on society of IT exceeded and even surprised the most daring forecasters. The Internet created a parallel sphere with its own language, and unprecedented ethical codes. The Internet era is the information era, which poses a special challenge to the higher education system, which is responsible for creating and disseminating information. Almost automatically, IT is perceived as having enormous potential to change the practices of both teaching and learning (Schrum & Berenfeld, 1997).

There is a latent, presumption that these technological changes and their assimilation in learning environments will create a change for the better in learners' everyday life and learning process (Banyard, Underwood, & Twiner, 2006). Many have claimed that assimilating IT applications creates a positive revolution in learning environments (Hazan, 2008). As a result of these, higher education institutions currently encourage their staff to develop web-based,

online courses (Davis, 2000; Vrasidas, 2002). Nonetheless, as some have pointed out, it must be acknowledged that technology-supported teaching is not always superior to conventional teaching that has withstood the test of time. Instructors who are extremely knowledgeable in their field, who impart their own experience in the field to their students, who spice their lectures with relevant personal anecdotes – may be more effective than technology-based teaching as far as students' motivation to learn and assimilate the material is concerned (Miller, Martineau, & Clark, 2000).

Nevertheless, in this context, many scholars have already noted that even a lecture by a gifted speaker may be enhanced by using video technology and computer applications in the classroom (Bensusan, 1997). Technology-supported teaching may not be essential for all classes, but it offers not inconsiderable assistance in illustrations, it diversifies lectures, and facilitates learning. The use of such or other computer applications is not in itself a goal. It should be seen as a means to encourage active learning, immediate feedback, improved communications between teachers and students, etc (Chickering & Ehrmann, 1996). One of the most promising areas which have attracted much expectation, is the field of online courses. These, also known as "virtual courses" are learning environments comprising linked webpages that contain fragments of information, notice boards, glossaries, and the like. Webpages typically contain activities that require student initiative, such as completing course assignments, sending email messages, participating in a course forum, and following links to other websites. All these webpages, and their links, create the learning environment (Oliver, Herrington, & Omari, 1996). The learner's environment, or the learning climate, is a minor topic in most studies that focus mainly on a single dimension of online teaching: students' achievements. Developmental efforts invested in online teaching mainly focus on the teachers rather than the students. Teachers provide their opinion on course planning, and the presentation of course materials using new technologies; yet online course design focuses less on the issue of how students learn using the new technologies (Boud & Prosser, 2002). For example, one study on this issue directed readers' attention to the fact that a large portion of the development and assessment of the new technological

methodology focused on improving students' exam grades, while much less effort has been invested by developers in exploring the question of whether students' experiences improved as a result of the assimilation of the new method (Alexander & McKenzie, 1998). Ultimately, there are those who claim that the development of online teaching should concurrently invest in both areas: the design of teaching, and the informed exploration of the students' learning process. The impact of online learning and teaching on students' academic-social climate is a topic that has been neglected in most studies on online teaching and learning in the academe (Sherry-Steinberg, 2000). In the present study, an attempt was made to emphasize this almost forgotten dimension of online learning – students' academic-social climate and its significance for students' academic success.

2. Social-academic climate in online learning environments

Many studies have focused on examining classroom climate and its psychological components (Fraser 1982, 1986, 1989; Fraser & Waldberg 1991), or what is called "social-academic climate." Social-academic climate is valuable in teaching and learning in all educational settings. Nonetheless, the study of social-academic climate in online learning environments is in its infancy. Very few studies have examined the development of this dimension of online courses in higher education institutions. One of the major studies in Israel was conducted on Tel Aviv University's online courses. Sherry-Steinberg (2000) examined the development of social atmosphere in two online courses offered by Tel Aviv University. One course was conducted entirely online, and the second was conducted as an online course that included classroom sessions. The researcher sought to examine to what extent social atmosphere is dependent on face-to-face interactions. Findings showed that students in the exclusively online course, who participated in the discussion groups, developed a stronger and longer-lasting sense of constructive social atmosphere.

Discussion groups established a "cafe atmosphere" and facilitated discussions on course topics (ibid). In contrast, students in the combination online-classroom course did not develop a similar sense of social atmosphere, but

rather reflected the social atmosphere that characterized the classroom sessions. Nachmias, Mioduster, & Shemla, A (2000) examined the effect of combining online courses and classroom teaching on social atmosphere. Their study findings show that the use of online courses significantly affects learning and teaching by increasing students' involvement and participation.

Online courses supported by classroom sessions intensify the group's sense of constructive social climate and their joint work. In contrast to the findings of Sherry-Steinberg, the researchers concluded that the space of online courses significantly contribute to social-academic aspects of learning, and enhances learning in general. Cohen (2006) launched an online learning site for elementary school pupils, and sought to examine the impact of the site on pupils' learning experience. Findings of this study show that the website forum made a significant contribution to the relationship between the teacher and the pupils, among the pupils, and between the teacher and the parents. The researcher claimed that the forum created a "platform" that pupils used to express their opinions and emotions, which led to a constructive social atmosphere. Generally, social-academic climate in online courses is examined on the basis of the nature of the group discussions that develop in the virtual sphere. Some have claimed that online discussions may pose obstacles for students due to the absence of face-to-face interactions. It has been argued that distance and the absence of non-verbal cues create social inhibitions that prevent openness in learning or the construction of new ideas (MacLoughlin & Luca, 2000). Nonetheless, students are able to feel part of the online group, and this feeling is a function of participants' discussion and interaction style, course structure, the instructor's role, and other technical features of the medium (Wegerif, 1998). In online courses, students go through a learning experience together, in which they learn the method of online work, and how to use the medium in order to complete their assignments. Creating a sense of community among students is important to enhance the efficient use of online courses (Sherry-Steinberg, 2000).

The sense of belonging and the sense of convenience offered by online courses create a sense of flow that is typical of discussion groups that use web-based learning activities as part of their classroom activities. In their study,

Chan and Repman (1999) found that the sense of convenience and flow was characteristic of groups whose group members were previously acquainted. This sense promoted the achievement of academic goals by allowing students to work effectively and offer feedback, and by creating a sense of achievable challenge (ibid). In addition to discussion groups that represent a step up in the development of constructive social-academic climate, instructors in e-courses may also constitute a key factor in encouraging such a climate. The course instructor may determine the level of the discussions and their boundaries, with the aim of advancing the students in the learning process (Anderson & Kanuka, 1997; Wolcott, 1995).

Instructors who assume the role of "social hosts" may increase participation levels by providing feedback, presenting examples, and encouraging learners in a fruitful learning process (MacLoughlin & Luca, 2000). E-courses that are supported by classroom meetings require that instructors use their insights from the classroom dynamics in order to give individual treatment to students (Hara, Bonk, & Angeli, 2000). With the correct leadership and management, course instructors may create a climate that is suitable for joint work and facilitates the development of intellectual discussions (Collison, Elbaum, Haavind, & Tinker, 2000; Gabriel, 2007; Salmon, 2000).

3. The IT environment and teaching practice

Technological changes are, of their very nature, designed to serve man and satisfy human needs, yet technological changes frequently transform society and individuals. Technological inventions are incorporated into the social agenda as an integral part of a new social order. A review of research that focuses on the impact of new technologies is a good indication of society's assimilation of technology. For example, in the 1950s and 1960s, the effectiveness of television as a teaching medium was compared to the effectiveness of traditional teaching methods. In the 1970s and 1980s, a broad range of computer-aided teaching methods and distance learning were topics of comparative studies designed to examine their relative effectiveness (Bernard et al., 2004).

More recently, higher education institutions the world over have expanded their use of technologies for teaching and teach (Jones & O'Shea, 2004). Much effort has been invested in constructing online environments, to exploit the flexibility in time, space and pace of learning that e-learning offers (Inglis, Ling, & Joosten, 2002). Furthermore, a series of advantages are identified with these technologies, including a significant improvement in the utilization of learning time, decreased learner's dependence on the place or learning extended boundaries of learning and information sources, cancellation of dependence on textbooks as an exclusive source of knowledge, the potential for developing an active learning environment, extending the learning dialogue, among other benefits (Hiltz, 1998). Despite the numerous benefits, use of IT has not yet proven itself unequivocally. For example, Bernard and associates (2004) performed a meta-analysis on data from 232 studies conducted between 1985 and 2002 in the field of e-learning. The researchers compared distant learning and classroom learning on three main dimensions: achievements, attitudes, and dropout rates. They found that classroom teaching generated superior achievements for synchronous learning, but distance learning generated superior achievements for asynchronous learning. Lou, Abrami, and d'Apollonia (2001) compared the use of computer technologies in group compared to individual learning. Findings of this study indicated that computer-supported learning in small groups is more effective than learning with a computer alone.

The researchers concluded that the effectiveness of computer usage as a learning tool is largely dependent on the learner's traits. The researchers distinguished between students who prefer independent learning environments, and students who need a learning environment that incorporates human interaction. The first group will be more successful at individual distant learning, and the second group will be more successful when they learn in a group (Diaz & Cartnal, 1999). Turney, Robinson, Lee & Soutar (2009) examined the benefits of using technology to improve students' achievements in higher education. The researchers found that assimilation of computer applications may significantly improve students' achievements, provided that the study goals are assimilated in the computer modules. According to the researchers, the fact that e-courses allow

students to review the pool of course materials, imposes on the student's responsibility for their own learning, and adjusting the materials to their individual pace of learning. Furthermore, computer applications provide feedback to students and navigate them through the learning process, allowing them to enhance their achievements.

In synchronous learning methods, online learning methods are not suitable for all students. Some students miss the "campus atmosphere" and unmediated contact with peers and instructors (Keith, 1999). Nonetheless, it appears that e-learning loses some of its potential in the absence of proper instruction. In such cases, e-learning is perceived by students as merely a tool that offers convenience, communications, and classroom management (Kvavik, Caruso, & Morgan, 2004; Meister, 2002), and they remain oblivious to the learning potential it embodies. Active participation in group discussions does not necessarily attest to expanded knowledge. Davies & Graff (2005) examined the connection between participation in online discussions and students' final course grades. They found that active participation in course website activities and discussions does not necessarily lead to better grades. While the assimilation of technology may function as a catalyst for learning, it requires a paradigmatic transformation and shift of emphasis from teaching to teach (Rogers, 2000). Indeed, technology has a deep effect on teaching styles and information access (Connolly, Jones, & O'Shea, 2005) but we are as yet unable to state with certainty that technological changes and the incorporation of e-courses lead to better learning results. Studies attest to a high degree of dichotomy in all regards to the effectiveness of technology for learning.

Some view technology as an effective tool that enhances teaching and learning outcomes (Pifarré, 2007; Salpeter, 1998; Wenglinsky, 1998; Wodecki, 2006). Others claim that studies that support technology-aided learning are context-specific and are not generalizable (Healy, 1998). Some specifically claim that technology does not improve learning or knowledge compared to traditional, technology-free learning (Wright, 2008). One of the concerns that arise in the context of learning and technology is the attitude toward learning. Learning may be perceived as a simple act of knowledge acquisition, a transition from nothing

to something. According to another, more complex perspective, learning is a process whose goal is not only to acquire knowledge but, an activity that contributes to the individual's development and enrichment (Vygotzky, 1978). This type of learning is perceived as a factor that contributes to an individual's broadening horizons and enrichment of his inner world (Renshaw, 1992). This is learning in which the socio-cultural dimension exposed to the learner is more significant that the level of concrete knowledge.

When learning is viewed in its broad context, the social dimension of learning is emphasized. Some scholars have argued that the social dimension of learning may disappear in e-courses that ostensibly neglect this aspect of the learning process. This dimension of e-learning has hardly been examined systematically. Nonetheless, the question is raised regarding the contribution of e-courses to a broad definition of learning, learning that enriches, expands and empowers the inner world of the learner, and incorporates social and cultural dimensions into the learning process. As a review of the literature illustrates, the revolution caused by technological developments pose a challenge for the education system in general, and higher education, in particular (Leung & Ivy, 2003). The new tools require reconsideration of our methodologies in the field of academic teaching (Passig, 2003), especially in view of the fact that the higher education system has become more accessible than ever to students (Offir, Lev, Barth, & Shteinbok, 2004). This transformation requires a study of the effectiveness of technology applied to learning and teaching (Mioduser, Nachmias, Lahav, & Oren, 1999).

The enormous growth since 1999 in the number of e-courses in Israeli institutions of higher education is mainly attributed to the national policy of the Commission of Higher Education (CHE), and its executive body, Meital (Center for Inter-University Knowledge on Learning Technologies). The CHE's call for a new pedagogy to accompany these new technological tools has, however, largely remained unanswered (Tel-Aviv University, 2003). A preliminary examination of academic e-courses in Israel indicates that the technology burst forward, leaving pedagogy behind in its wake. There is a lack of methodologies, guidelines, and assessment methods in higher education concerning the development and

construction of e-courses that are well-grounded in theory, objective principles, and research findings.

The majority of existing e-courses are based on the personal intuition or experience of instructors or developers (Nachmias & Mioduser, 2001; Saba, 2001). Although conclusions have been drawn on a local level, based on local assessment studies, there is no repository of rules or guidelines based on the totality of conclusions concerning the effectiveness of e-courses in higher education (Guri-Rosenblit, 2003; Naveh, Tubin, & Pliskin, 2003; Shelma & Nachmias, 2004; Soffer, Nachmias, Raban, & Ram, 2004). Furthermore, very few assessment studies have been conducted on e-courses, a fact that emphasizes the extent to which technological adoption has preceded a corresponding transformation in pedagogy (Nachmias, Mioduser, Oren, & Lahav, 1999; Nachmias & Segev, 2003). This situation is apparent not only in the "how" of online learning environments but also in the "what" – what we wish to teach our students to prepare them as knowledgeable individuals, each in his own field, and responsible citizens of the 21rst century. Questions such as these have not been granted sufficient attention in the field of curricular development in general, and in the field of technological adoption planning in particular (Blomeyer, 2002; Dyson, 1998).

4. The case study's Methodology

The study analyzed below was conducted at an academic institution in Israel, with the aim of examining the level of usage, the effectiveness, and the contribution of course websites, as part of an assessment of the results of an institutional initiative to encourage instructors to add course materials to course websites and to teach courses that are supported by websites. The study focuses on a single department: the Department of Mathematics and Computer Sciences, in which most of the institution's e-courses are based, thanks to a Meital grant [1,2,3]. Furthermore, this department has a unique character: in addition to a discipline unto itself, the department also provides core courses in mathematics and computer sciences to students in other departments (such as the Faculty of

Science), or introductory courses in mathematics and computer sciences to students in departments such as Business Administration and the School of Health Sciences.

Study population - This study is based on data from 194 courses offered in the Department of Mathematics and Computer Sciences between the academic years 2002/3 and 2008/9. Of these 194 courses, 112 courses (by 13 instructors) have been offered as e-courses since 2004/5, and 82 courses (by 14 instructors) are not supported by online materials. In each year, the grades and assessment scores of each instructor were calculated, over all the courses each instructor taught [5,6,7]. Data analysis includes bi-directional analyses of variance by year and course type (e-course, traditional course). Analyses were performed on course grades and instructors' scores (overall evaluation, course structure and organization, clarity of lectures, instructor's attitude to students, and correspondence between lectures and tutorials) awarded by students.

4. Research tools and research design

The following questionnaires were used to examine the contribution of website-supported courses to students' learning as precisely as possibly:

Student feedback questionnaire: Students' assessments of instructors and courses, awarded on a Likert scale from 1 to 5 (5 represents the highest score). The questionnaire comprises five items related to teaching, including an overall evaluation of the instructor's teaching performance and two items related to course tutors (overall evaluation, and correspondence between tutorials and lectures).

Course exam scores. Students' final course grades are derived from their exam scores in courses. After instructors marked the exams, exam scores were collected over several years, spanning the period before and after the incorporation of a course website.

Semester A and B grades in each of the study years were collected. Student feedback questionnaires were administered in the classroom, during the final three weeks of the course. Students were informed that their data would be used for the purpose of assessing their instructors and courses only. Questionnaires were anonymous.

4. Summary of Findings and Discussion

The findings of the present study point to a consistent picture: the major contribution of course websites, as perceived by students, related mainly to expanded access to course materials and level of course organization and structure. According to students' evaluations, website-support did not enhance lecture clarity, instructors' attitude to students, or the correspondence between lectures and tutorials. Such findings unfortunately underline the fact that the shift from traditional to website-supported courses was not accompanied by a corresponding improvement in teaching quality, in terms of clarity or correspondence between the material covered in the lectures and the tutorials, or in teachers' attitude to their students. The findings point to the regrettable situation in which instructors have not fully understood or implemented the pedagogical potential of online technology as a means for improving their practice and their students' learning. Most institution-wide studies on e-learning focus on the number of courses, number of participating students, and instructors' impediments to e-teaching. Very little attention has been given to the manner in which technology can be utilized to enhance teaching and learning, and use e-learning to upgrade various pedagogical aspects of teaching such as interactions between students and teachers, or enrichment of course materials [8,9] . Therefore it is not surprising to discover that in Israel today, institutions of higher education have not overcome their traditional bias toward research – a bias that rewards faculty for publications and research efforts, but extends less attention or appreciation for academic development and academic quality. As a result, the institutions view e-learning as a project outside core interests rather than an integral part of the institution's operations and an integral part of

instructors' responsibilities. The findings of this study point to several factors that explain how technology precedes pedagogy in the world of higher education. Additional factors include insufficient attention to faculty training and acquisition of technical skills, marketing considerations of the institutions, and a lack of comprehensive models and methods of assessment that might support e-learning project development. As educators who acknowledge that these new technologies have created a paradigmatic change, we must embark on a mission to discover and assimilate new pedagogies that are uniquely suited to the new technological options currently available to educators. To improve instructors' equality of teaching, it is advised to reinforce the pedagogical aspects of these new technological tools, and propose programs to assimilate the new technologies as an integral part of the practice of teaching, rather than as an external teaching and learning aid. The authors believe that computers will never replace instructors, but instructors who master the pedagogical aspects of IT and harness them for the purpose of enhancing the quality of teaching and learning, will eventually replace those who do not.

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